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U. S. Department of Agriculture

United States Department of Agriculture,

BUREAU OF PLANT INDUSTRY,

Seed and Plant Introduction and Distribution,

WASHINGTON, D. C.

DISTRIBUTION OF COTTON SEED IN 1904.

PLAN OF DISTRIBUTING THE VARIETIES.

The Bureau of Plant Industry has in progress investigations in the improvement of cotton, and as a foundation for such work it is necessary to determine the varieties best suited to each section of the cotton belt. The distribution of cotton seed is thus arranged with the view of furnishing growers with seed of new varieties to test in comparison with the varieties they already grow. This will enable them to make comparisons and select varieties best suited to their climatic and soil conditions. Information regarding the success of varieties in different sections is as yet too meager to enable a judgment to be formed as to which will succeed best in a certain locality.

In the distribution of cotton seed it is proposed to select, so far as possible, new and little-known varieties which have proved valuable in certain localities, and distribute the seed in such a way as to insure their being generally tested throughout the cotton States. It is intended at the end of the season to follow up each package with a circular, in order to obtain information in regard to the success in various sections of the varieties distributed. Growers receiving the seed are urged to cooperate with the Department of Agriculture by making a careful test of the seed which is sent with this circular. In another part of the circular will be found descriptions of the varieties distributed and a statement of the points on which information is desired.

In the distribution the present season several special features have been introduced. The studies of the cotton industry which the Department has been prosecuting strongly indicate that the growing of long-staple cottons is destined to become much more general in the near future, and should be encouraged. Last year Griffin and Allen Improved, two of the best long-staple Upland cottons, were distributed, and this year specially select seed of a new race not before

distributed has been secured. A second special feature of the distribution the present season is the Rivers Sea Island cotton, a variety resistant to the serious malady known as wilt or black-root, a small quantity of the seed of which was distributed last year. A special circular is sent out with the seed of the Rivers variety, and it is therefore not described in this circular. This seed will be distributed in the Sea Island sections of Georgia, Florida, and South Carolina.

The races of ordinary short-staple Upland cotton selected for distribution this year are Culpepper, Pride of Georgia, Russell, Truitt, King, Shine Early, and Parker. The last three sorts named have been procured particularly for distribution in the boll-weevil sections of Texas, and a special circular giving directions for their cultivation in order to avoid serious injury from the boll-weevil will be sent out with each package of seed.

The other short-staple varieties will be distributed equally, so far as possible, in all of the cotton-growing States.

DESCRIPTION OF VARIETIES DISTRIBUTED.

SHORT-STAPLE UPLAND VARIETIES.

CULPEPPER.

Culpepper (Pl. I, fig. 1) is an improved big-boll variety, originated by J. E. Culpepper in Merriwether County, Ga., in 1890. The variety is said by Mr. Culpepper to have been produced by the hybridization of Wyche and Dixon and to have been selected through some five years to fix and improve the type. It is reported to be hardier and more prolific than either of the parents and to produce a better staple.

The bolls are large, and the locks are 7 to 10 seeded. The seeds are gray, tufted, and of medium size, averaging in weight from 0.13 to 0.14 gram. The lint is from 1 to 1½ inches in length, of good quality and abundant, giving an average of 32 to 34 per cent. The size of the seed, percentage of lint, etc., of course vary greatly with the conditions of soil and climate. The plant forms long limbs near the ground, which gradually become shorter toward the top. It is said to stand drought very well and to shed its bolls very little.

This variety is well known locally, and has been tested at the Georgia and Alabama experiment stations, where it gave satisfactory results. In variety tests made by the Department of Agriculture at Columbia, S. C., in the season of 1901, it proved to be one of the best of all varieties experimented with for that section.

The seed of this variety distributed is of select quality and was grown by J. E. Culpepper, of Luthersville, Ga., in the season of 1903.

PRIDE OF GEORGIA.

Pride of Georgia (Pl. I, fig. 2) is a big-boll Upland cotton originated by James F. Jones, near Hogansville, Troup County, Ga., about

1901. It was produced by selecting especially fine early stalks from the Jones Improved, the first selections being made in 1900. The seed was carefully selected again in 1901 and 1902, and in 1903 Mr. Jones stated "the crop was so near perfect that seemingly no benefit could be derived by further selections." The variety is described by Mr. Jones as being similar to the original Jones Improved, but inclined to fruit and mature earlier.

The variety is recommended by Mr. Jones for its productiveness and resistance to drought. He writes as follows:

By a crop test I am getting 3 bales of Pride of Georgia to 2 of Jones Improved grown on the same land with equal opportunity. Its finest qualities are prolificness, round, full boll, and stocky growth. I have obtained an average yield of a little over a bale of 500 pounds per acre, the average yield of seed cotton being about 1,500 pounds.

The variety was grown in the season of 1903 in the test plats of the Department of Agriculture at Columbia, S. C., by the side of two strains of the Jones Improved. The Pride of Georgia plants were lower, more compact and stocky, about ten days earlier in date of maturity, and had rounder bolls than either strain of the Jones Improved tested. It is certainly one of the earliest and most prolific of the big-boll cottons, and would seem to be a valuable addition to our list of varieties.

Plant low, stocky, vigorous, and prolific, of Truitt type, with 2 to 4 wide-spreading, horizontal branches from near the base. Bolls round to ovate, very large, 5-locked; seeds tawny, fuzzy, or tufted, medium size, well covered with lint, 8 to 9 per lock. Staple 1 inch in length, white, very strong, good in uniformity, and of medium fineness. Per cent of lint, 32 to 34. Season of maturity, early.

The seed of this variety distributed was grown by James F. Jones, at Hogansville, Ga., in the season of 1903.

RUSSELL.

This is a big-boll Upland cotton (Pl. II, fig. 3), originated by J. T. Russell, at Alexander City, Ala., in 1895. The variety was introduced to the public by G. F. Park, of the same place, in 1897. The following is a description of the origin of the variety as given by Mr. Park:

He [Mr. Russell] found a stalk of cotton in his field with distinct foliage and seven extra large bolls open. Picking these bolls he decided to experiment; so the following spring planted the seed in his garden and grew 58 stalks from which he obtained 110 pounds of cotton. With the select seed from his 110 pounds he planted 1 acre, which produced 1,100 pounds of lint cotton. Again, from seed selected from this acre, Mr. Russell planted his crop and made an average of over 1 bale per acre.

This variety, while an accidental selection, is supposed by the originator to have been a cross of Truitt with Allen Long-Staple, though this is entirely conjecture. After the first selection the variety was developed and improved by careful selection carried on through several generations.

This variety has been tested at several experiment stations, and found to give good results. It is recommended for its large bolls, extra length of staple, productiveness, and resistance to drought. One detrimental character which this variety possesses is the green color of the fuzz on the seed. Oil mills in some places refuse to buy the seed unless at a reduced rate, owing to the fact that the "linters" taken from the seed are green and largely unsalable. The green fuzz on the seed is one of the most characteristic features of the variety.

Plant of low, compact form, prolific, of Truitt type, having several long, branching basal limbs. Bolls very large (Pl. II, fig. 3), ovate, blunt-pointed, opening very wide, mainly 5-locked. Seeds large, weighing from 0.15 to 0.17 gram, fuzzy and green, this being one of the most distinctive characters of the variety. Seeds 8 to 10 per lock. Lint of superior quality, averaging about $1\frac{1}{8}$ to $1\frac{1}{2}$ inches. The large seeds are well covered, and give usually from 30 to 32 per cent of lint.

The seed of this variety distributed was grown by G. F. Park, the introducer of the variety, at Alexander City, Ala., in the season of 1903.

TRUITT.

Truitt, or Truitt's Big Boll (Pl. II, fig. 4), is a race of cotton originated in Troup County, Ga., in 1885, by George W. Truitt. The variety was produced by selection from the so-called "Old Georgia White Seed," which is said to have had a considerable local reputation. The originator says:

Some parts of my crop frequently showed in places, under high experimental cultivation, a very marked freak-like growth of such superiority and so prolific that I gathered and separated the seeds and continued the process until I had propagated a distinct, unknown variety. * * * The seed now uniformly produce the same variety every year, and are as true to kind as races of corn, wheat, or any other product.

The type of the variety is said by Mr. Truitt to have been obtained primarily by two years of selection, but to have since been considerably improved.

Truitt cotton is now grown somewhat extensively in Georgia, Alabama, North Carolina, and South Carolina. In tests made at Columbia, S. C., in the season of 1901, it proved to be one of the best of about forty varieties. It has been carefully tested at the Alabama Agricultural Experiment Station for several years, and has there given the best average yield of any variety tested. In the eastern Southern States mentioned this variety has been grown somewhat generally, and is known to be a very good sort under most conditions. It should be more widely tested, however, and more generally cultivated in regions where it proves to be superior to other varieties. In Texas, Louisiana, Arkansas, and western sections, where it has not been generally grown, it should be given a thorough trial.

Plant robust, prolific, with 3 to 4 large basal limbs and one main central stalk, with comparatively short branches. Bolls very large (Pl. II, fig. 4), ovate, blunt pointed,

opening wide, and easy to pick. Seeds fuzzy, gray, comparatively large, averaging about 0.14 gram in weight. Lint white, three-fourths to 1 inch long, and of good quality. Seeds well covered, yielding 31 to 33 per cent of lint.

The seed of the variety distributed was grown by George W. Truitt, the originator of the variety, at Lagrange, Ga., in 1903.

KING.

King, or King's Improved as it has been called, is a very early variety of Upland cotton originated by T. J. King, of Louisburg, N. C. In attempting to improve the cotton grown on his plantation Mr. King made tests of very many varieties, but found none that exactly met the requirements as he recognized them. "I therefore determined," he states, "to try to mix the two kinds which between themselves appeared to possess all the essentials desired and get a composite cotton that combined the good qualities of both varieties." Such a combination he claims to have secured in his King's Improved, which has been widely distributed and tested, and is probably as generally known as any other cotton variety. It is very distinct from any other of the well-known varieties.

King is regarded as one of the best varieties for the northern part of the cotton belt, where the season is too short for late varieties. It is the sort most generally planted late in the spring, after oats, as so-called "stubble cotton," its short season enabling it to mature a good crop even in the short time then available. The earliness of the variety and its consequent bearing on the boll-weevil question are the principal reasons for selecting it for distribution the present season.

Plant 2½ to 5 feet high, rather spreading in habit, with numerous limbs gradually decreasing in length from below upward. Bolls small, nearly round, with small blunt point, 4 to 5 locked, opening well. Seeds medium size, weighing from 0.10 to 0.11 gram, covered with brownish or greenish fuzz. Lint white, strong, three-fourths to 1 inch in length. Per cent of lint usually about 33. Season very early.

The seed of this variety is distributed the present season entirely in the boll-weevil district of Texas, and a special circular accompanies each package, giving special directions for cultivation. The variety was included in the 1902 seed distribution and was then sent to all sections of the cotton belt.

The seed distributed by the Department of Agriculture was grown by the originator of the variety, Mr. T. J. King, in North Carolina, in the season of 1903.

PARKER.

Parker cotton was originated by John M. Parker, sr., in Bolivar County, Miss., about 1868. It was produced by careful selection, and ever since its production has been grown on the extensive Parker plantations in preference to all other varieties. Mr. John M. Parker, jr., the present owner of the plantations, informs the writer that care has

been exercised for years in selecting the seed and preserving the variety in a high state of productivity.

In a variety test at Columbia, S. C., in the season of 1902, this variety gave very excellent results. The plants were from $3\frac{1}{2}$ to 4 feet high, vigorous and well fruited. In season it was one of the earliest of about fifty ordinary sorts. The lint is very good for an ordinary Upland variety, being strong, hard, silky, and above the ordinary in length, averaging on Mr. Parker's plantation from $1\frac{1}{8}$ to $1\frac{3}{16}$ inches long. Mr. Parker recommends the variety as hardy, vigorous, prolific, and easy to pick.

Plant of Peterkin type, having an erect central stem, with numerous lateral limbs. Bolls medium size, round or ovate, blunt pointed, 5-locked, opening well. Seeds 7 to 9 per lock, medium size, gray, tufted, well covered. Lint long, $1\frac{1}{8}$ to $1\frac{3}{16}$ inches, white, strong. Per cent of lint 31 to 33. Season early.

Considerable seed of Parker cotton was sent to the boll-weevil sections of Texas last year, where, owing to its earliness and storm-proof qualities, it gave very excellent results in comparison with other varieties, proving to be one of the best sorts for cultivation in boll-weevil infested regions. It has for this reason been purchased the present season for distribution in the boll-weevil districts of Texas, and a special circular describing the methods of culture, etc., is sent out with each package.

The seed distributed by the Department of Agriculture was grown by John M. Parker, jr., on the plantation on which the variety originated, at Maxime, Bolivar County, Miss.

SHINE EARLY.

Shine Early (Pl. III, fig. 6) is a small-bolled Upland cotton originated by J. A. Shine in Duplin County, N. C., about 1885. It is thought by Mr. Shine to be a hybrid between Sea Island and a short-limb cluster cotton, and is described as developing a smaller stalk than the Sea Island, but larger than the Upland parent. Mr. Shine states:

The variety is recommended for its earliness, thrifty growth, being quick to develop limbs and fruit, and for its ability to stand drought and wet weather. It has rather open foliage, which does not shade the fruit, thereby giving the bolls a chance to mature perfectly. It has always sold for the highest market price of short-staple cottons, and gives an average yield of 1,200 pounds of seed cotton and 400 pounds of lint per acre.

The tests of this cotton which have been made in the boll-weevil sections of Texas indicate that it is one of the desirable varieties to grow under such conditions owing to its earliness. The seed is distributed in boll-weevil sections of Texas only, and a special circular is sent with each package.

Plant spreading, rather large; bolls small, ovate and pointed, 4 to 5 locked. Lint about 1-inch long, and forming about 33 to 34 per cent of the weight of the seed cotton. Season of maturity very early.

The seed of this variety distributed was grown by Mr. J. A. Shine, the originator of the variety, at Faison, N. C., in the season of 1903.

LONG-STAPLE UPLAND VARIETIES.

SUNFLOWER.

This variety (Pl. III, fig. 5) is of unknown parentage, being the offspring of seeds shipped to an oil mill in Yazoo City, Miss., in 1900, and which were purchased for planting by Mr. Marx Schaefer. The field in which the seeds were planted soon attracted attention by the vigorous growth of the plants, and when the crop began to mature it was readily seen that it was of very superior quality. Selections of seed from the best shaped and most prolific plants were made that season, and the same method of selection has been followed for each succeeding crop, with the result of making the plants more uniform in shape and more prolific. The yield has been from 300 to 500 pounds of lint per acre, fully equal to the yields of short-staple varieties grown during the same seasons on the same plantation. The crops sold in Yazoo City during the last three years have brought from 14½ to 15½ cents per pound, and no other cotton sold in the same market has brought a higher price.

The writer grew a small plat of Sunflower cotton in the season of 1903 at Columbia, S. C., in comparison with plats of all of the well-known varieties of long-staple Uplands. While, from the history of the origin of the variety, it would probably be supposed to be the same as some well-known sort, it proved to be very distinct in general appearance, form of branching, earliness, and productiveness. The selections made by Mr. Schaefer may have materially modified the characters of the variety. However this may be, it is certainly distinct from any sort known to the writer, being about ten days earlier than Allen Improved, Griffin, or any of the other varieties of long-staple Upland tested in comparison with it. It was nearly as early as a plat of King planted near it, but continued to set and mature bolls much later than that variety. Its earliness and productiveness indicate that it will be found to be a good variety for general cultivation.

Plant vigorous, medium in size, sugar loaf in form, similar to Peterkin, and very prolific; bolls 4 to 5 locked, medium size, ovate, blunt pointed, opening well but not dropping the seed cotton; seeds medium in size, covered with white fuzz, 8 to 9 per lock; lint fine and strong, white, 1¾ to 1½ inches in length, 28 to 30 per cent of the seed cotton. Season early.

The field from which the seed distributed was taken was planted with seed from plants carefully selected under the direction of the Department of Agriculture by Prof. S. M. Tracy. Professor Tracy carefully examined Mr. Schaefer's fields and had sufficient seed picked from select plants to plant a fairly large field in 1903. This field was grown by Mr. Schaefer at Yazoo City, Miss., and furnished the seed which is now being distributed by the Department of Agriculture.

SEA ISLAND VARIETIES.

RIVERS.

The Rivers Sea Island cotton, which is immune to the serious malady known as wilt or black-root, was produced as a result of special breeding experiments conducted by Mr. E. L. Rivers, of James Island, S. C., in conjunction with the Department of Agriculture. It is highly recommended for cultivation in the Sea Island districts of Georgia, Florida, and South Carolina on all soils infected with wilt. A special circular is distributed with the Rivers cotton, and this variety is referred to here simply to show the general plan of the entire cotton distribution for the season. A careful description of the variety and of the experiments leading to its production appeared in Bulletin No. 27, Division of Vegetable Physiology and Pathology of the United States Department of Agriculture, by Mr. W. A. Orton.

METHODS OF CULTIVATION AND GINNING.

SHORT-STAPLE UPLAND VARIETIES.

The methods of cultivation which should be pursued in growing the varieties of short-staple Upland cotton distributed are the same as those used for any ordinary Upland cotton. No exact directions can be given with respect to the distance apart of the rows or the distance between the plants in the row, as the space required by each plant is determined by the richness of the soil in each case. Culpepper, Pride of Georgia, Russell, Truitt, King, Parker, and Shine Early are all quite similar in size and habit of growth. Under ordinary conditions satisfactory results would be obtained with these varieties by planting the rows 4 feet apart and the plants from 18 to 24 inches apart in the row. On rich soil this distance should be somewhat increased, while on sterile land closer planting would be desirable.

LONG-STAPLE UPLAND VARIETIES.

Sunflower, while producing a long, fine staple, is in size and general appearance very similar to ordinary short-staple varieties such as Parker and Peterkin, and the same cultural methods are to be recommended as are used with the ordinary short-staple sorts. In picking, preserving, and ginning, however, more care is required if the highest market price is to be realized. Greater care should be exercised in the picking to avoid getting the fiber mixed with fragments of leaves, bolls, etc. Fiber from immature and weather-stained bolls should also be discarded. Pickers familiar with ordinary cotton methods are liable to be too careless in their endeavor to gather large quantities and increase their wages thereby. In fine grades of long-staple Upland

cotton it would probably also be found desirable to spread the seed cotton on a platform in the sun for a few hours to dry before storing it.

The difficulty of properly ginning long-staple Upland cottons has been considered an impediment to their general cultivation. It is generally recognized that long-staple Sea Island sorts require to be ginned on a roller gin, as the saw gins tear and break the fiber to such an extent as to greatly reduce its value. It is also very generally supposed that the long-staple Upland cottons require to be ginned on a roller gin, and this understanding has prevented many from attempting to grow these cottons, as roller gins are ordinarily accessible only to growers in regions where Sea Island cotton is cultivated. Experience has shown, however, that long-staple Upland cottons may be ginned on ordinary saw gins if care is used in the process. Before ginning these cottons the gin saws should be sharpened square across the teeth and then dulled somewhat by use in ginning ordinary short staples.

It is also important to run the gin at a lower rate of speed than in ginning ordinary short-staple cottons, 300 revolutions per minute being usually recommended. If these precautions are observed the long-staple Upland cottons may be very satisfactorily ginned on any ordinary saw gin.

It is also important that growers of long-staple Upland cottons give special attention to the marketing of the product. The writer in 1902 saw several bales of long-staple Upland cotton sold to a buyer at a small interior town in South Carolina for 10 cents which were certainly equal to bales of similar cotton which he saw sold in the New Orleans market the week following at 15 cents, when ordinary cotton was selling at $8\frac{1}{4}$ cents. Many of the failures with long-staple Upland cotton have been due to the lack of experience on the part of the grower in the matter of marketing. Many buyers take advantage of the growers' ignorance and purchase cotton for 10 cents that is worth 15 cents and realize the difference themselves. Until buyers inform themselves on the value of long-staple cotton and pay reasonable prices, it will have to be consigned to general long-staple markets, such as New Orleans, Memphis, Savannah, etc., or to some of the large New England markets, such as Providence or Boston.

HOW TO GROW PURE SEED OF GOOD QUALITY.

It is a well-known fact that varieties of cotton become mixed and impure unless special care is taken to prevent crossing with other varieties. If growers receiving seed of any of the varieties sent with this circular desire to grow the same sort another year, precaution should be taken to plant the seed in an isolated patch, situated as far as possible from any other varieties.

It should be at least one-fourth of a mile from any other cotton and

preferably in a field surrounded by a forest, particularly on the side nearest to other cotton fields. Before any seed is gathered for planting all plants which are not true to the type of the variety should be carefully weeded out.

If it is desired to keep the variety up to its full productiveness and better adapt it to local conditions, the planter may easily accomplish this by following a simple and inexpensive method of selection. Before beginning the picking go over the patch carefully and select and mark with a white cloth the best plants; that is, those most productive, earliest in ripening, and having the largest, best formed, and most numerous bolls. Care should also be exercised to select plants that are true to the type of the variety. Before each picking send a careful man over the patch to pick the seed from the selected plants; preserve such seed separately, gin it separately to avoid mixing, and use it to plant the crop the next year. If this simple method of selection is carried out each year, the yield will doubtless be greatly increased and much more added to the crop than would result from special fertilization or cultivation, though these factors should by no means be neglected. The importance of careful seed selection is seldom fully recognized, and growers are urged to give this factor of cotton culture more careful attention.

HERBERT J. WEBBER,
Physiologist, in Charge of Laboratory of Plant Breeding.

Approved:

A. F. WOODS,
Pathologist and Physiologist.

REPORT OF RESULTS DESIRED FOR PUBLICATION.

In order to determine the comparative values of the different varieties of cotton in various parts of the United States, the growers receiving this seed are requested to give it a thorough trial in comparison with the variety or varieties that they generally grow, and be prepared in the fall of 1904 to report the results of the test to the United States Department of Agriculture. A report will then be requested covering the following points:

- (1) Character of the soil.
- (2) Character of the season.
- (3) Total yield of seed cotton produced. (This should be determined by actually weighing the product.)
- (4) Total yield of lint produced. (Determined by actual weighing.)
- (5) Size of patch grown. (Determined by actual measurement.)
- (6) Yield per acre. (Estimated from the patch grown.)
- (7) Is the variety to be classed as excellent, good, fair, or poor for your section?
- (8) Name of the variety ordinarily grown by the planter making the test.
- (9) Yield of ordinary variety this year on same soil as the variety under consideration.

It is especially requested that growers carefully note the points enumerated above in order that they may secure the necessary data and be ready to supply accurate information when it is called for next autumn. If data sufficiently accurate are furnished, a report will be compiled and issued giving the results of the various trials in all sections, and this report will be sent to all planters cooperating in the experiment. In this way it is hoped to obtain valuable and reliable information regarding the varieties best adapted to various sections of the cotton belt.

Growers receiving this seed who are willing to cooperate with the Department of Agriculture in making the above test are requested to fill in the accompanying franked postal card, which requires no postage, as soon as the seed is received and return the same to the Department.

A. J. PIETERS,
Botanist in Charge.

Approved:

B. T. GALLOWAY,
Chief of Bureau.

WASHINGTON, D. C., *January 9, 1904.*



MATURE UNOPENED BOLLS OF COTTON.

Upper figures, Culpepper; lower figures, Pride of Georgia.



MATURE UNOPENED BOLLS OF COTTON.

Upper figures, Russell; lower figures, Truitt.



MATURE UNOPENED BOLLS OF COTTON

Upper figures, Sunflower; lower figures, Shine Early.

